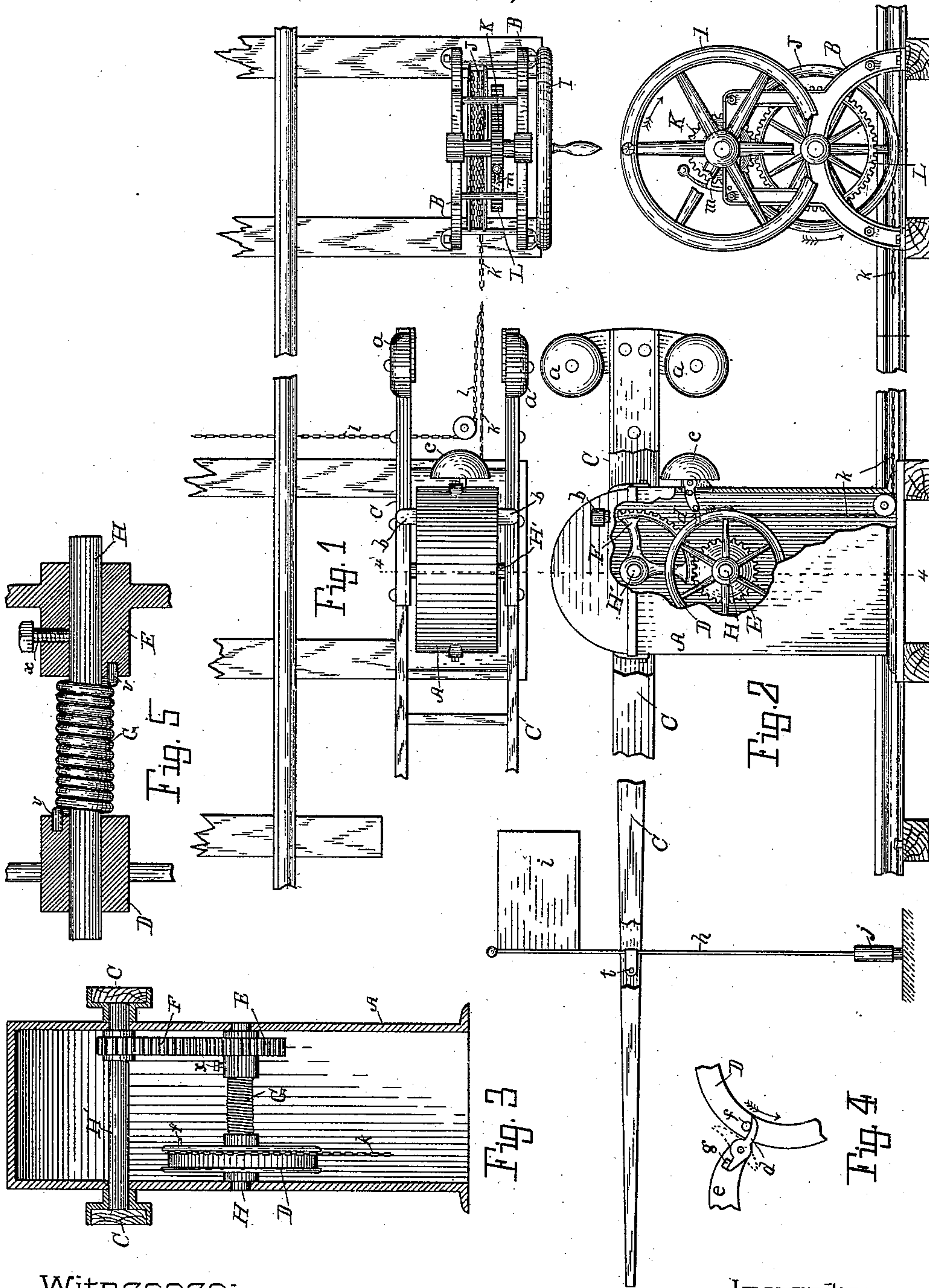


(No Model.)

F. M. SPAULDING.  
RAILWAY CROSSING GATE.

No. 446,083.

Patented Feb. 10, 1891.



Witnesses:

Walter S. Wood.  
Belle C. Freeman

Inventor.

Frank M. Spaulding  
By Lucius C. West  
Att'y.



# UNITED STATES PATENT OFFICE.

FRANK M. SPAULDING, OF KALAMAZOO, MICHIGAN, ASSIGNOR OF ONE-HALF  
TO FRANK C. BALCH, OF SAME PLACE.

## RAILWAY-CROSSING GATE.

SPECIFICATION forming part of Letters Patent No. 446,083, dated February 10, 1891.

Application filed June 7, 1890. Serial No. 354,629. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK M. SPAULDING, a citizen of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented a new and useful Railway-Crossing Gate, of which the following is a specification.

This invention relates to that class of railroad-crossing gates which are operated by hand, and more particularly relates to a pending application of mine bearing even date herewith, Serial No. 354,628, in which the gates are operated by the wheels of the train.

The present invention consists in a construction and combination of parts whereby the gates are operated by hand.

In the drawings forming a part of this specification, Figure 1 is a broken plan view. Fig. 2 is an elevation with parts broken away. Fig. 3 is a section on line 4 4 in Figs. 1 and 2, looking from a point at the right. Fig. 4 shows enlarged lettered details from Fig. 2, and Fig. 5 shows enlarged lettered details from Fig. 3, parts being in section on line 4 4 in Figs. 1 and 2.

Referring to the lettered parts of the drawings, the gate C is composed in the ordinary manner of two truss-bars, one each side of the upper end of the case A, provided at the rear end with weights *a a*. The gate is attached to the axle H' of the gear-wheel F, said axle having bearings in the case A. Below the axle H' is a shaft H, upon which is loosely mounted a sheave D at one end of said shaft. On the other end of said shaft is rigidly attached a gear E by means of a set-screw X. Upon the shaft H and between the sheave D and the gear E is a spiral spring G. The ends of this spring are attached to the gear E and the sheave D at *v v*. The gear E of the shaft H meshes with the gear F of the shaft H'. A chain or cable *k* leads from the hand mechanism below described to the sheave D, and is attached thereto the same as the chain or cable in the application referred to, and the operation, so far as the above-described construction is concerned, is the same—that is, when actuated by the cable the sheave D revolves on its shaft until the spring G is tightly compressed and the tension becomes such that the motion will be im-

parted to the gear E and the shaft H, at which time, of course, all the parts H, D, G, and E will revolve together. The function of the spring G is the same as in the other application referred to—that is, the shock is cushioned by being first imparted to the spring, thus insuring greater safety to the mechanism and preventing a too sudden downward throw of the gate to its horizontal position across the roadway. The spring G performs still another function, viz: said spring yields in conformity to the swaying motion of the gate in the wind when in its vertical position.

Referring to Fig. 1, a chain or cable *l* is attached to the cable *k*, and passes around a pulley and across the track, where it is shown broken. In use this chain is designed to pass to another apparatus like that shown in Fig. 2; but as it forms no part of this application no further mention of it need be made.

*i h* is an ordinary signal pivoted to the gate C at *t* and provided with a rubber spring at the lower end to cushion the shock when it strikes the ground during the downward movement of the gate.

In Figs. 1 and 2 is shown a signal-bell at *c*. The clapper-lever *e* of this bell is provided with a pivoted dog *d*, in a position for a projection *f* on the sheave D to come in contact with said dog and thus operate the bell just before the gate starts to swing down and thus give warning to pedestrians. The lever *e* is provided with a projection *g*, and the end of the dog *d* comes in contact with said projection when the sheave D is turned in a direction to lower the gates. (See the arrow in Fig. 4.) By this means when the sheave D turns in the opposite direction the dog *d* will tilt, as in dotted position in Fig. 4, and thus keep free from the projection *f*.

At *b b* in Figs. 1 and 2 are stops to prevent the gate from swinging down too low.

In connection with the foregoing, which is also shown in the application above referred to, I employ the below-described mechanism for operating by hand. At a suitable distance from the gate is a bracket B, mounted upon and projecting above the ties of the track. An axle bearing a sheave J has bearings in said bracket, said axle also being provided with a gear L. The chain or cable *k* is



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 5 mounted upon the sheave J. A crank-shaft bearing a crank-wheel I has bearings in the upper end of the bracket B. This crank-shaft is provided with a gear K, which meshes  
 10 with the gear L. Thus by turning the crank-shaft the chain or cable is wound on the sheave J, which operates the mechanism in the case A, as hereinbefore described. A pivoted dog *m* engages the teeth of the gear  
 15 K. By means of this dog the operator locks the mechanism so as to hold the gates in their down position, and when the dog is freed from the gear the gates will swing to an upright position, owing to their weighted end.

15 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

20 1. The combination of the case, an axle having bearings in the upper end of said case, the gate attached to said axle, a shaft having bearings in the case below the axle, a sheave loose upon said shaft, gears connecting the shaft and axle, the gear of the shaft being rigidly attached thereto, a cushioning-spring

between the gear and sheave attached at its 25 ends to said gear and sheave, a gear-connected crank-wheel and sheave, and a chain or cable attached at the ends to the sheave, substantially as set forth.

2. The combination of the case, an axle 30 having bearings in the upper end of said case, the gate attached to said axle, a shaft having bearings in the case below the axle, a sheave loose upon said shaft, gears connecting the shaft and axle, the gear of the shaft being 35 rigidly attached thereto, a cushioning-spring between the gear and sheave attached at its ends to said gear and sheave, a chain or cable attached to said sheave, and suitable mechanisms for drawing on said cable by hand- 40 power, substantially as set forth.

In testimony of the foregoing I have hereunto subscribed my name in presence of two witnesses.

FRANK M. SPAULDING.

Witnesses:

L. N. BURKE,

BELLE C. FREEMAN.